
DIAGNOSTIC TOOL FOR PULSE SYSTEMS

This box is intended for the diagnosis of MERCEDES vehicles of the type W124, W126, R129, W140, W201 provided that they are equipped with the pulse control system. In general, you should know that this box is not compatible with vehicles equipped with the 38-pin socket and the ODB2 standard. However, some W140 and R129 models equipped with this socket accept this box by means of an interface sold as an accessory.

The device is powered by the vehicle's electrical energy, terminal 16. It does not have its own power source. In the event of power failure of the vehicle terminal, it is perfectly possible to power the box with another source connected to the red cable, provided that the vehicle ground is connected to the negative pole of this source.

If this condition is not met, the device will turn on, but will probably not return any meaningful code on its display.

It should be noted that the 8-pin sockets of the W124 do not have a power supply... It will therefore be necessary to take a voltage on the vehicle: cigarette lighter, radio, pilot lights etc...

A 9V battery or a mini 12V battery can perfectly be used, the device consumes less than 100mA or about 1W.

Correct operation is guaranteed for any supply voltage between 7V and 30V, DC voltage. The device does not work with alternating voltage or with direct voltage outside these values. If the voltage exceeds 30V, damage not covered by warranty is to be expected.

Since the device is also intended for the operation of the vehicle's engine while on the road, it includes a filtering system which eliminates disturbances due to the alternator and ignition in order to ensure stable operation of the internal microcontroller.

If, during the engine starting phase, the voltage of the vehicle battery drops below 7V, the device will restart automatically as soon as the voltage has reached this value again and the current display will be lost.

DEVICE OVERVIEW

The box includes 3 leads which are to be connected to the vehicle's terminal block, as shown below:

red on terminal 16 (+12V)

black on 1 (negative reference and ground)

yellow on the terminal of the computer to be tested.

A green or yellow key (test) and a red key (erasing codes)

LEDs confirm the action on these keys.

A third LED (yellow or green) indicates the status and behavior of the test terminal.

A 3-digit display which constantly shows the voltage of the vehicle's battery. You can use this device as a battery voltage monitor on any vehicle by connecting only the + and - on the battery or any other DC voltage source: cigarette lighter for example.

Do not use the adapters to charge smartphones, they only deliver an insufficient voltage of 5V.

A 4-digit display, an essential contact element between the vehicle and the operator which displays in particular the fault codes detected.

POWER ON

The red lead connected to a 12V supply, the black lead connected to 0V, the electrical reference, (most often vehicle ground or battery negative terminal) and the yellow lead to the terminal corresponding to the computer to be tested are sufficient to start operation the device, once the ignition is on, terminal 16 only delivering the supply voltage once the ignition is on.

(If you must stay in this configuration for a long time, it is strongly recommended that you maintain the charge of the vehicle battery by connecting a charger. If the device works perfectly for voltages up to 7V, it is not even for certain computers which can send inconsistent information if they are underpowered).

Operation of the displays confirms power-up.

The device is protected against connection errors.

Switch on the ignition.

As soon as the device is powered up, the 3 LEDs light up and an animation appears on the display. In principle, you will receive your device with the setting set for 129...

See below to easily change this setting :

SETTING THE ANIMATION CORRESPONDING TO YOUR VEHICLE

The animation at startup is configurable.

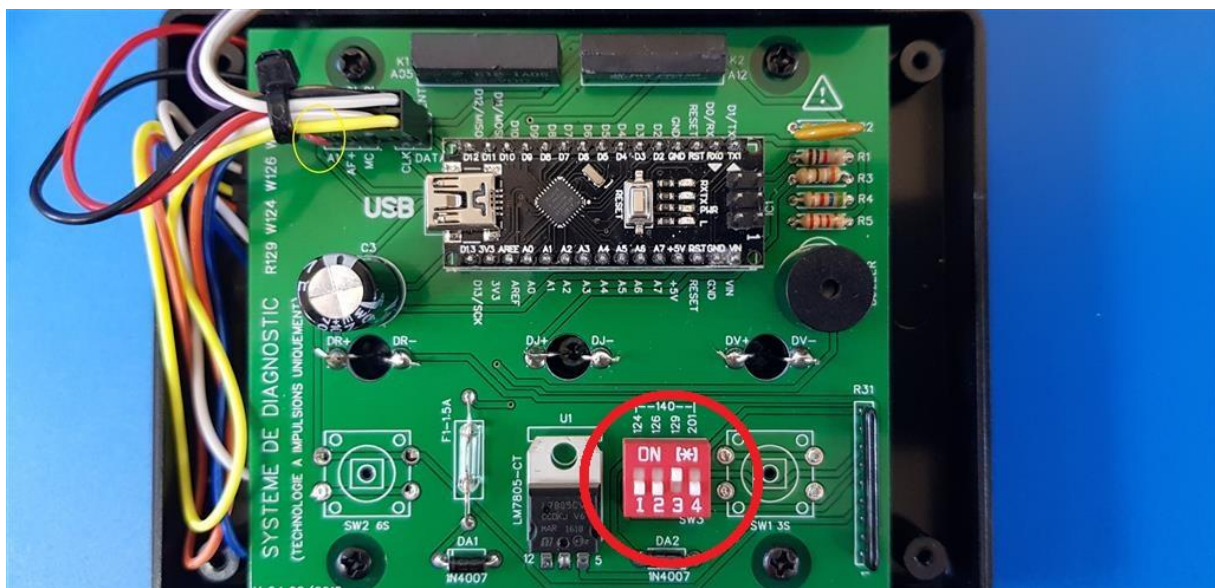
This animation scrolls the numbers 124, 129, 201, 126 or 140 depending on the position of an internal selector in the device.

It can also be removed to speed up device initialization when powered on.

It has STRICTLY NO IMPACT on operation, it is essentially recreational and lasts only a few seconds.

The setting of this animation is carried out by means of a switch which is located on the printed circuit of the device.

Remove the 4 screws from the case and carefully separate the 2 parts. Be careful not to disconnect the 3 connecting wires.



Do not touch the components with your fingers, especially the microcontroller which is sensitive to electrostatic charges.

Locate the circled pink switch in the photograph above.

The switch has 4 microswitches...Use a small screwdriver for the desired positioning of the switches, ON upwards, and OFF downwards.

1 on ON the others on OFF = 124

2 on ON the others on OFF = 126

3 on ON the others on OFF = 129

4 on ON the others on OFF = 201

ALL ON = 140

ALL OFF = no animation, ignition is instantaneous.

SOUND MANAGEMENT

The device is equipped with a mini speaker that emits sound alerts.

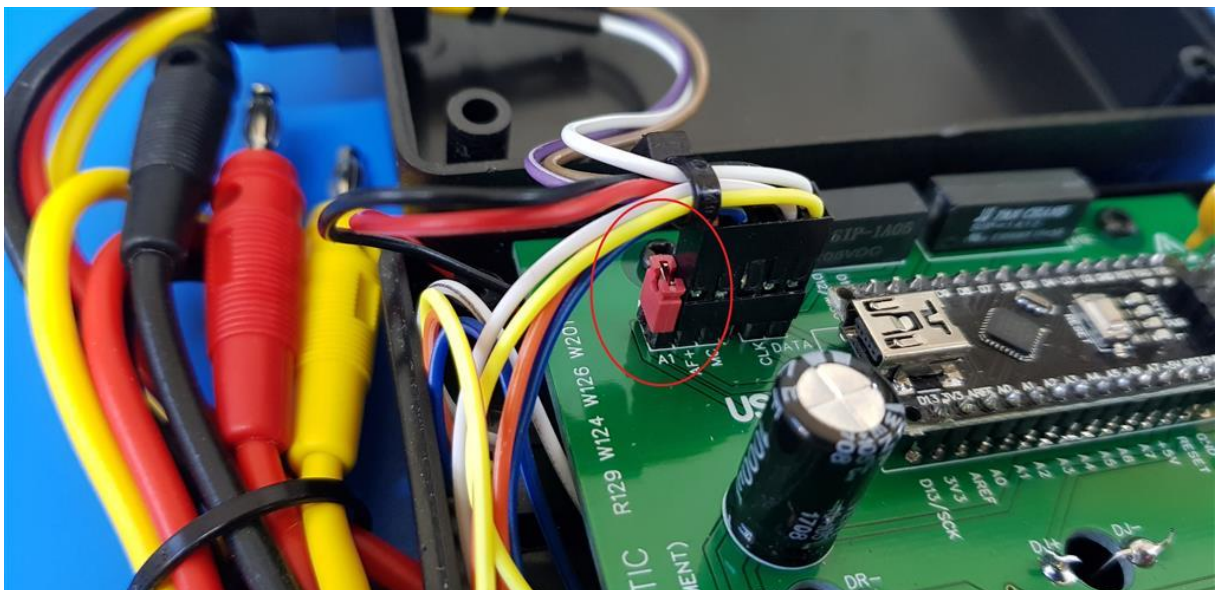
On power-up, the loudspeaker is always active.

To deactivate it until the next power-up, make sure that the display shows Code or Cd00, displayed by pressing the green or yellow key.

Then hold the Red button for 4 seconds until the display shows db00 and emits a BEEP. The sound is then deactivated.

Do the same to reactivate, the display then indicates db01. Restarting the device also turns the speaker back on.

However, if you wish to permanently deactivate the sound, you can, after opening the box, remove the small pink jumper located against the connector, as shown in the following photograph. The loudspeaker is then physically disconnected and therefore no longer works :



Once these convenience settings have been made, close the case by very moderately tightening the

screws so as not to damage the fragile fasteners.

READING FAULT CODES

Once the device is connected to the vehicle's terminal block, the left-hand display shows the battery voltage.

The precision is of the order of 100mV.

Check that this voltage is correct, it takes more than ten volts.

A lower value indicates a discharged battery and may already cause random faults or read errors.

These phenomena are not due to the device, but to the vehicle itself whose circuits are underpowered. Although the ECUs risk no damage, it is hardly desirable to diagnose an electrically underpowered vehicle.

If you have to carry out tests that last, be sure to switch off any power consumers on the vehicle, in particular the internal air conditioning fan and the radio. Close the doors or turn off the interior lights.

We recommend that you lay down a battery charger during the test if it is to last.

Once the animation has been performed or immediately after power-up if the power-up has been disabled, the device indicates CODE.

This message indicates that it is ready and invites you to press the LEC key to start the test.



Once the key is pressed, the device performs a countdown of 3.0 seconds. The display is transmitted in tenths of seconds.

During this countdown, a request is sent to the vehicle's computer so that it transmits the codes stored in its memory.

At the end of this countdown, a BEEP sounds and the device is in data reception mode.

The display then indicates Cd00, the device analyzes the information returned.

With each returned pulse, the central LED lights up very briefly and a beep is emitted. The periodicity is about 2 seconds and does not depend on the device.

The fixed display indicates the end of the test. Then note the code indicated and refer to the list to find out. know the meaning.

Cd00 or Cd01 indicate that no fault is present.

You can then change terminals and press the LEC key again for another test.

Each time the yellow plug is moved, it will be necessary to press the green key.

Do not disconnect the yellow wire either during the test procedure or during the erasing phase.

In this case, the information will be lost, you will have to start the procedure again.

When a fault code appears, you can press the LEC button again: If the same code reappears, there is no other.



Here, for example, the display stopped at 13.



CLEARING FAULT CODES

Clearing is done by simply pressing the Red key, provided that the counter gives a significant value: If the counter displays Cd00 or Cd01, there is therefore no fault, the key is automatically deactivated, pressing it does not will have no effect.

The erase sequence begins, the counter briefly displays EFF then the count starts from 6.0 to 0.0, always in tenths of a second.

Once the countdown has come to an end, the device indicates ERASE and flashes to confirm erasing, then automatically restarts the test so that the user can see that the fault has indeed been erased.

If the fault reappears, it means that it cannot be erased, for multiple reasons, for example the non-signal of a camshaft sensor when the engine is stopped.

During the erasing time, the red LED must be on, it confirms the action on the car's ECU.

The permanent display of any LED indicates a fault in the device, simple crash or failure requiring a return.

The same applies if the display shows inconsistent characters, particularly when powering up.

FEATURES

Material: PMMA+PVC

Fault display: red LED 7 segments 4 digits multiplexed

Voltage display: 7-segment 3-digit red LED with decimal separator.

Accuracy of the voltage display: 1dV

Internal power supply: 5V (digital regulator)

Consumption at rest: 67mA (for a voltage of 12.5V)

Consumption during the test: 80mA (for a voltage of 12.5V)

Consumption during erasing: 90 mA (for a voltage of 12.5V)

Operating voltage range: 7V to 30V

Protection against connection errors: YES

Test Terminal Short Circuit Protection: YES

cord length: approximately 50cm, multi-strand SILICONE and COPPER material.

Waterproof: NO

Shockproof: NO

Antiparasitics: YES

Test terminal isolation: > 1kΩ

Dimensions: (mm) W:11.8 H:8.7 D:4

Weight (g): 221

PRECAUTIONS FOR USE

The jumper wires are long enough that you can place the device anywhere in the engine space and perform your tests.

The exit of the wires from the device is done on a cable gland. Although the strand holds perfectly, do not pull too hard, you risk causing an internal rupture.

The device is not waterproof and should not be immersed or subjected to high humidity.

It is recommended to keep it in a protection.

It is also shock sensitive. The materials of the case are fragile... We can replace a damaged case and in general all the components of the device.

During the test or clearing phase, abrupt disconnection of the device will not cause any damage, at worst, the fault being cleared will not.

As already announced, the device is protected against any inversion or connection error. Thus, pressing a key when the Yellow terminal is at +12 will see the message CCCC appear on the screen, indicating a short circuit or connection fault.

The current from the short circuit is limited to around 1A and lasts around 10ms.

Until the abnormal connection is corrected, the device will be unusable.

A normal connection puts the device back in normal configuration, without any damage.

The possibility of a rupture of the fuse of the car which feeds the connection terminal block is real...

If after this kind of bad connection the device does not turn on any more, check that the supply of terminal 16 is good at 12V potential.

If there is no voltage, replace the fuse on the vehicle which supplies terminal 16.

The device is equipped with an internal 1.5A fuse. This fuse is used to protect the 5V power supply circuit of the microcontroller and the microcontroller itself.

The destruction of this fuse confirms a fault on the electronic card. It is soldered to the circuit board and is not user replaceable.

Its destruction imperatively requires a return of the device to after-sales service.

As such, it is always good to remember that a fuse is a protection element, it is not an element that prevents the occurrence of a breakdown.



No software defects were found during development and during testing. It has been operational hundreds of times in various circumstances.

The device must be stable and precise.

However, if a crash occurs, blocked display or display of aberrant characters, disconnect and reconnect the power supply after waiting at least 10 seconds.

If the crash occurs as soon as the power is turned on, try connecting the + and the - to another power supply, directly to a battery, leaving the yellow wire unconnected.

If operation is normal then, check your vehicle's battery voltage.

Operation can be simulated with a 9V battery connected to the red and black wires...

You will appreciate the care with which the device has been made, note that the dark red front is made of PMMA (polymethyl methacrylate).

It acts as a trim and also as a diffuser for the red elements of the displays. This material greatly improves contrast and reading in full brightness.

Very rigid and robust, this material is nevertheless very sensitive to micro-scratches.

During handling, micro-scratches may appear on this front panel, you can remove them with bodywork polish and a micro-fiber cloth. Be careful not to press too hard on the LEDs.

We hope that this device will be an essential ally for you in your repairs. You will pay off its cost almost from your first test.

VEHICULES COMPATIBLES

This device works on MERCEDES vehicles type W123, W124, W126, W129, W140, W201 provided they are equipped with the 8 or 16 pin terminal socket.

Some vehicles equipped with the 38-pin socket (R129 and W140) can operate using an adapter.

Computers which control the following elements can be tested if the vehicles are fitted with them:

Injection systems

ASD differential

Airbag system

Air conditioner

Roll Bar (convertibles)

Ignition system

ADS Active Suspension

ABS system

ESP system

Convertible top operating system (convertibles)

Anti-theft system as standard

Central vacuum locking

Automatic gearbox type 722.5

EN CAS DE PROBLEMES

THE VOLTAGE DISPLAY DOES NOT LIGHT AND THE APPLIANCE DOES NOT WORK:

Check the voltage between the black lead and the red. If the voltage is correct, you can open the box and check the position of the wires on the cable gland. If it is correct, return the box to after-sales service

THE DEVICE SEEMS TO WORK BUT RETURNS NO CODE:

Press the green or yellow key.

When the word Code appears, briefly touch the yellow wire with the black wire...The counter should increment. If this is the case, the device is working, if not, return the box to after-sales service.

ON POWER-UP, THE VOLTAGE IS DISPLAYED NORMALLY BUT THE DISPLAY OF THE CODES DEFAUT RESTE FIGE AVEC UN AFFICHAGE INCOHERENT.

Devices with the green button: (the microcontroller is soldered)

Open the box and disconnect the main connector for a few seconds, then reconnect it. Try again.

If the fault persists, send the unit back to after-sales service.

Devices with the yellow button: (the microcontroller is mounted on a plug-in socket)

Perform the previous manipulation. If the fault persists, ask us for a new microcontroller. You will be able to replace it without sending your box.

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